

1991 HARLEQUIN DUCK SURVEY FOR THE LOWER CLARK FORK DRAINAGE

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15 October 1991

INTRODUCTION

The Harlequin Duck (Histrionicus histrionicus) is a medium sized, brightly colored diving duck. These ducks winter in the northern coastal waters of the Pacific and Atlantic Oceans then migrate to turbid inland streams to breed (Ehrlich et al. 1988). Two populations exist. The smaller population winters on the northern coasts of the Atlantic while the much larger population winters in the northern stretches of the Pacific North American coasts. The western population breeds in inland streams from northern Alaska to Central California and east to the east slopes of the Rocky Mountains (Bellrose 1980).

Harlequin ducks migrate to Montana between April and May. Upon arrival, mating courtship begins. After mating in mid-May to late June, the male migrates back to the coast while the female starts nesting. Broods are produced between mid-june and late July, 20-30 days after incubation. Approximately 60-70 days after hatching, the chicks fledge (Ehrlich et al. 1988).

Little work has been conducted on these species probably due to their low population density and need for remote, pristine habitats. The combination of the low numbers and undisturbed habitat needs of the duck encouraged Region 1 of the U.S. Forest Service to list it as a "sensitive species" in 1987. Like many bird species, the recruitment portion of the life cycle is critical for the maintenance of the species, thus the breeding areas in the West are of special concern.

In 1987, the Montana Natural Heritage Program started

surveying mountain streams in western Montana. The purpose of the survey is to document pair activity, brood locations, reproduction rates, and habitat usage. As part of this ongoing research, The Montana Natural Heritage Program contracted me to conducted Harlequin Duck surveys in the lower Clark Fork drainage, Montana. This report sums up my findings and observations of the ducks using the lower Clark Fork River drainage.

METHODS

Dave Genter, director of the Montana Natural Heritage Program, identified and prioritized streams to be surveyed between 17 June and 31 August 1991. Genter (pers.comm.) chose streams on the basis of past recorded sightings, low gradient (between 1-3%), stream width (15-50 feet), and water quality.

I conducted surveys during 2 time periods. The first time period was from 19 June to 17 July 1991 in which I looked for pair activity. The second period of stream surveys were weekends from 03-18 August 1991 and the week of 19-22 August 1991 in which we were searched for broods. On 29 June 1991 and during the weekends in August, Lora Beslanowitch and my dog aided me in the surveys.

Each stream received the same survey technique. The survey technique consisted of walking upstream, preferably in the stream bank, visually checking for ducks. Whenever possible, we scanned areas with binoculars before walking through them. When we identified a Harlequin Duck, we recorded the sex, number, markers, and the habitat where the bird was first located.

RESULTS

During the first time period, I worked approximately 50 hours a week surveying 20 streams or portions of (Table 1). I located 10 hens and 1 hen with a brood of 6 (table 2). I located birds in only 5 streams. Marten Creek and tributaries produced 6 birds, the Vermillion River and Swamp Creek housed 2 hens each, and Rock Creek contained 1 hen. The only brood located was in the lower portion of Swamp Creek. Beslanowitch and the dog accompanied me during the 3 sightings on Martin Creek. We may have relocated 2 of the above birds during the later survey, however we can only speculate.

In time period 2, we totaled approximately 40 hours per weekend surveying 18 streams or portions of (Table 3). We located 1 hen and 1 hen with a brood of 4 (table 2). We searched 3 streams during this time period which were not surveyed in time frame 1, however no new ducks were located. On 03 August 1991, We located a hen with 4 chicks on the South Fork of Marten Creek. Beslanowitch located a single hen on 10 August 1991 a quarter mile up from the mouth of the Vermillion River. The dog was present during both sightings. We never relocated any of the hens or broods during this survey time.

Most birds inhabited similar habitats. It appears that the birds use ripples adjacent to gravel bars and grassy openings on the bank (Appendix 1). However, thick riparian vegetation occurred in every case.

The water levels were higher this year (United States Geological Survey 1991). July showed the greatest increase in

Table 1. List of streams surveyed between 19 June and 17 July 1991.

| Stream | Date | Description |
|---------------------|---------------|---|
| Vermillion River | 20,21,24 June | From mouth to jct of Freeze out and Control Creek |
| Willow Cr. | 24 June | From Mouth to Rd. 7593 bridge |
| Swamp Cr. | 25 June | From trailhead to Wilderness boundry |
| Rock Cr. | 26 June | From mouth to gate on Rd. 150A |
| W.Fk Rock | 27 June | From mouth to Rd. 150 bridge |
| S.Fk Marten | 28 June | From mouth to waterfalls |
| McNeely Cr. | 28 June | From mouth to approx. 1 mile upstream |
| Marten Cr. | 29 June | From mouth to jct of branches |
| S.Branch Marten Cr. | 01 July | From mouth to approx. 1 mile upstream |
| N.Branch Marten Cr. | 01 July | From mouth to approx. 1 mile upstream |
| W.Fk. Elk | 02 July | From Rd. 2273 bridge to Rd. 430 bridge |
| E.Fk. Elk | 02 July | From Rd. 2273 bridge to jct of Lone Cr. Gulch |
| Graves Cr. | 08 July | From mouth to center of T23N,R29W,sec15 |
| Callahan Cr | 09 July | From NE corner of sec 23 to W end of sec 22 |
| S.Fk. Callahan Cr | 09 July | From Branch to Rd. 4554 bridge |
| Big Cr. | 10 July | From mouth to Rd. 336 bridge |
| E.Fk.Basin | 11 July | From Rd. 746 bridge to Rd. 92 bridge |
| Pete Cr. | 15 July | From mouth to N corner of T36N,R33W, sec 02 |
| Spread Cr. | 16 July | From mouth to Rd. 591 bridge |
| W.Fk.Yaak | 17 July | From Rd. 92 bridge to Yaak Falls |

Table 2. Locations of Harlequin Duck females during the 1991 survey of the lower Clark Fork, Montana.

| Stream | Date | Legal Description |
|------------------|-----------|--|
| Vermillion River | 21 June | T24N,R30W,SEC 02, 1/4NE,1/16SE 63.1.334 ✓ |
| | 21 June | T24N,R30W,SEC 01, 1/4NW,1/16NW 63.1.335 ✓ |
| | 10 August | T24N,R30W,SEC 14, 1/4NE,1/16NE 63.1.336 ✓ |
| Swamp Creek | 25 June | T25N,R31W,SEC 20, 1/4NE,1/16NE 63.1.337 ✓ |
| | 25 June | T25N,R31W,SEC 03, 1/4NW,1/16NW 63.1.338 ✓ |
| Rock Creek | 26 June | T26N,R32W,SEC 15, 1/4NW,1/16NE 63.1.339 ✓ |
| McNeely Creek | 28 June | T26N,R33W,SEC 11, 1/4NW,1/16NW 63.1.340 ✓ |
| Marten Creek | 29 June | T25N,R33W,SEC 25, 1/2E,1/4 Center 63.1.341 ✓ |
| | 29 June | T25N,R33W,SEC 27, 1/4SE,1/16SE 63.1.342 ✓ |
| | 29 June | T25N,R33W,SEC 32, 1/4NE,1/16NW 63.1.343 ✓ |
| S.Branch Marten | 01 July | T25N,R33W,SEC 32, 1/4NW,1/16SE + 63.1.344 ✓ |
| S.FK. Marten Cr. | 03 August | T25N,R33W,SEC 11/12, 1/2N Center *4 63.1.345 ✓ |

* denotes hens with broods, # denotes number of chicks

+ denotes 2 hens located together

Table 3. List of streams surveyed between 03 August and 22 August 1991.

| Stream | Date | Description |
|---------------------|-----------|--|
| S.Fk Marten | 03 August | From mouth to Sorrel Gulch (intermittent) |
| Marten Cr. | 03 August | From mouth to jct of branches |
| S.Branch Marten Cr. | 03 August | From mouth to approx. 1/2 mile upstream |
| N.Branch Marten Cr. | 03 August | From mouth to approx. 1/2 mile upstream |
| W.Fk. Elk | 04 August | From Rd. 2273 bridge to Rd. 430 bridge |
| E.Fk. Elk | 04 August | From Rd. 2273 bridge to W edge sec 04 (intermittent) |
| Vermillion River | 10 August | From mouth to Vermillion Falls |
| Swamp Cr. | 11 August | From Rd. 2220 bridge to first lake |
| Trout Cr. (Lolo NF) | 17 August | From mouth to SE edge sec 32 and From VanNess Cr. to S edge sec 07 |
| Rock Cr. | 17 August | From mouth to Rd. 2285 bridge |
| Lower Swamp Cr. | 18 August | From mouth to Rd. 2220 bridge |
| Graves Cr. | 18 August | From mouth to Graves Falls |
| Whitepine | 18 August | Dried up at sec 17 |
| N.Fk. Callahan Cr | 19 August | From Rd. 414 bridge to Idaho border |
| Marten Cr. | 20 August | From mouth to jct of branches |
| Vermillion River | 21 August | From Vermillion Falls to Moose Gulch |
| W.Fk. Elk | 22 August | From Rd. 2273 bridge to Rd. 430 bridge |
| E.Fk. Elk | 22 August | From Rd. 2273 bridge to W edge sec 04 (intermittent) |

flows at the Noxon Rapids Dam producing 43% more water per cubic ~~inch~~^{feet} per second than the 30 year average (Fig 1). Furthermore, only 3 years of the past 30 had greater flow rates in July than this year. The USGS does not have Noxon dam data past July or Plains flow data past June (Fig 2) available at this time. Overall, the Noxon Dam and Plains stations showed increases of 23% and 14% from the 30 year average over the same time period, respectively.

DISCUSSION

Most of the hens located in the early summer were not relocated during the late summer surveys. We relocated only 2 hens. I believe the hen found with a brood on the South Fork of Marten Creek was the same bird located on McNeely Creek earlier in the season. I am uncertain of the origin of the hen on the Vermillion River. The low number of broods and hens relocated suggests that most hens did not breed, were unsuccessful in breeding, and/or failed at rearing their young.

I believe I covered each stream listed in table 1 and table 2 thoroughly and completely. However, the possibility of missing birds exists. Harlequin females with broods are extremely secretive and may be hard to locate. I feel this was not a large problem in my study area. I attribute the low number of broods and hen sightings to factors other than poor detection.

I believe the dog did not affect the study results. The dog accompanied us on 5 of the 13 sightings, 1 of which contained a brood. We kept the dog at our side but she was never physically

restrained. She never attempted to chase or approach the ducks. The presence of the dog did not seem to alter the ducks' responses. Therefore, I believe the presence of a well behaved dog with the surveyor will not alter the results.

I suggest high water flows played a part in the low reproduction of Harlequin Ducks during 1991. July showed the most pronounced increase over the 30 year average at Noxon Dam flow station. July corresponds with the early portion of the chicks life cycle (Fig 1 and Fig 2). I believe the high water increased brood mortality by sweeping the young chicks downstream away from the hen or by drowning them. After not producing or failing to produce a brood, the hens migrate back to the coasts (Genter pers.comm.). This information explains the reason for low relocations of hens. I could not locate any information on the correlation between reproduction of Harlequin ducks and water flows, however I suggest a bell-shape relation occurs.

Fig 1. Graph of the 30 year average water flow vs. 1991 data at the Noxon Dam monitoring station, Montana (USGS 1991)

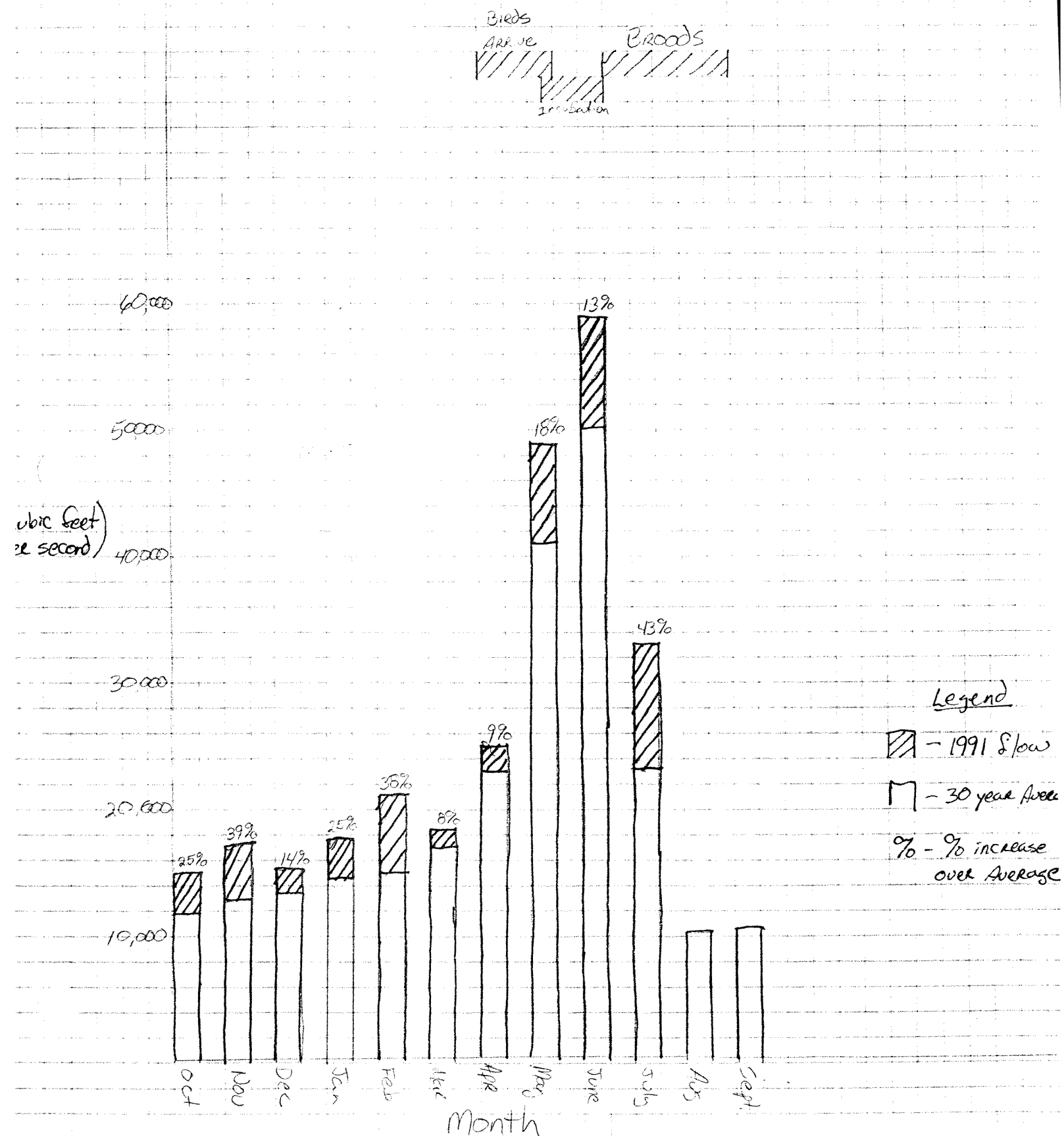
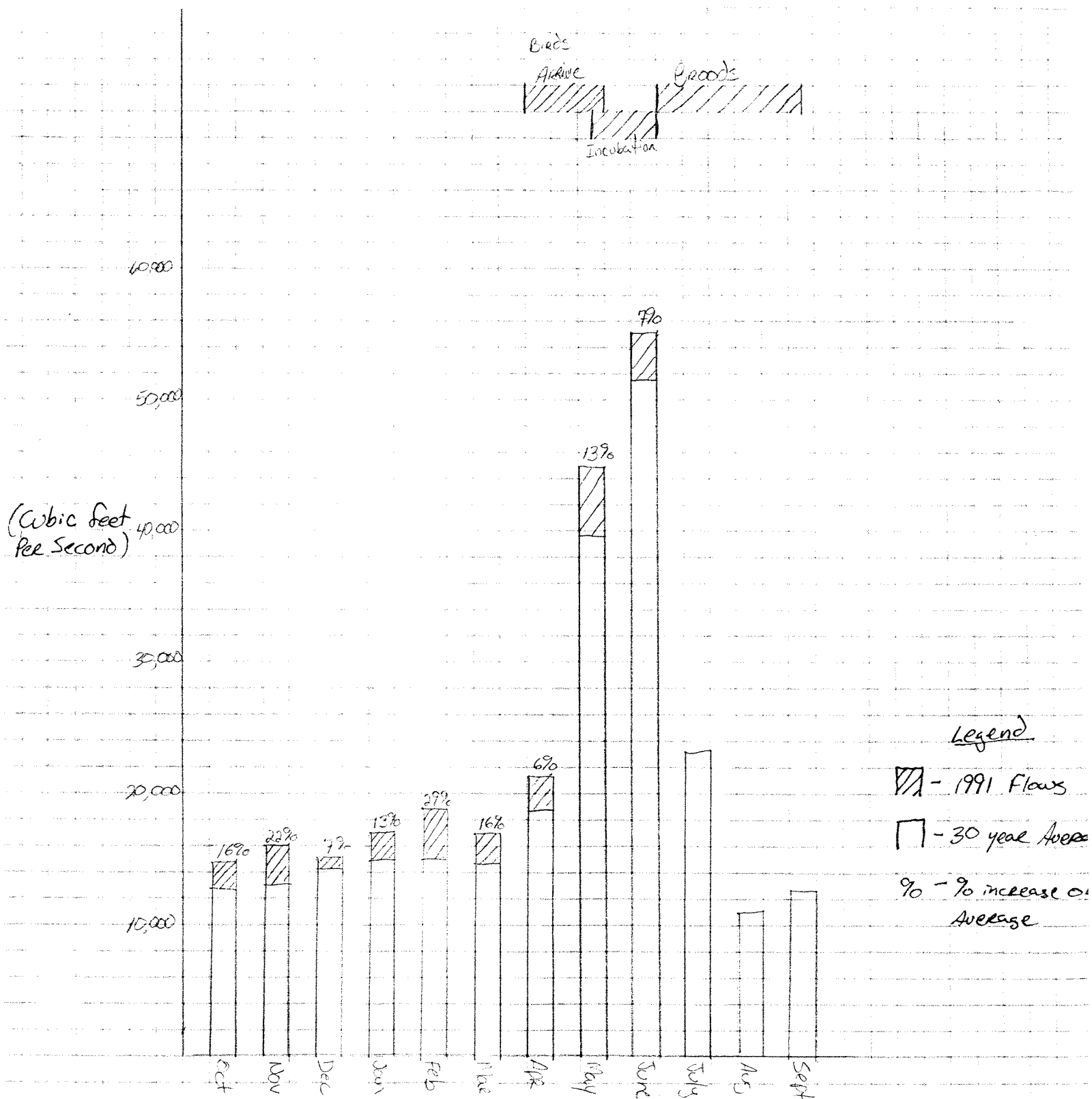


Fig 2. Graph of the 30 year average water flow vs. 1991 data at the monitoring station near Plains, Montana (USGS 1991)



LITERATURE CITED

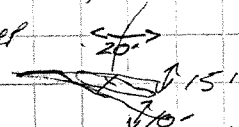
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- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. The birder's handbook. Simon and Schuster Inc., New York, NY. 784 pp.
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- United States Geological Survey. 1991. Water flow data for Noxon Dam and Plains, MT. Monitoring Stations.

Appendix 1. Sketches of areas which contained Harlequin Ducks.

21 June 91 Vermillion R.

1330 - overcast - Partly Cloudy

Single ♀, no mark

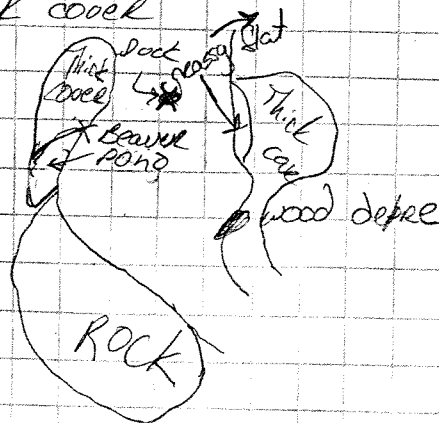
2' deep Rock island in above conf.
Base of alder.Just above Grouse Cr. trail
All ripples

21 June 91 Vermillion R

1350 - ♀

in ripples behind rock

≈ 40' wide - 2' deep

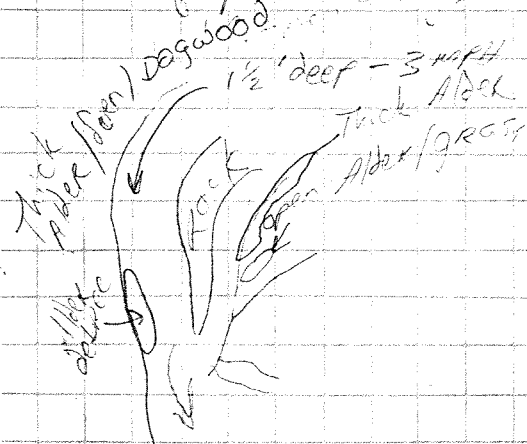
Alder/willow/cottonwood
Bank cover

25 June 91 0945

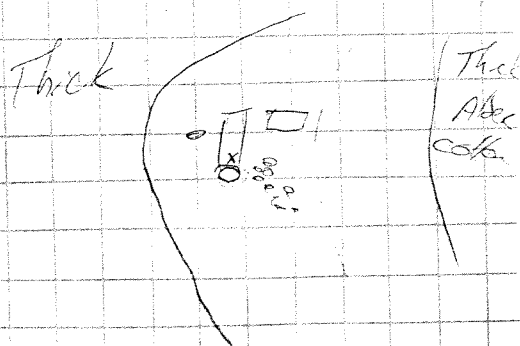
♀ w/ 6 chicks

Swamp CR.

on rocky pt. - no use.



25 June 91 12:30

♀ Loading on log
(ix 3' off water)v. fast water on both
side

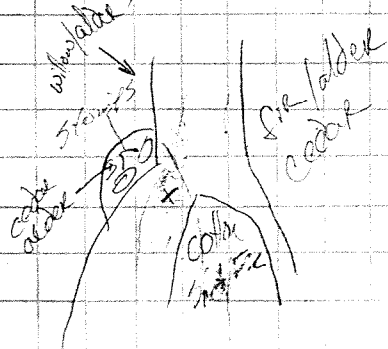
Location: Pe'ore pass
green area bet. 2 shale
parts

Rock Cr. 12:30

26 June

♀

ced. r / S.A. Fir / cotton-wood

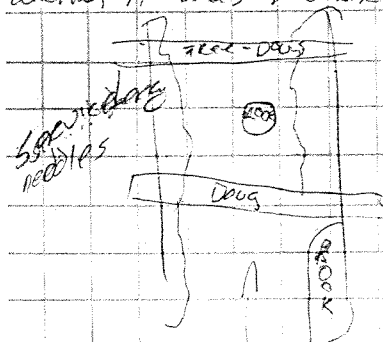


S.F. MARTEN - McNeely Cr

28 June

11:00

single ♀ sitting under
Dogwood. Flew up stream
channel a 7' 1' deep
Flew quickly - could not observe
whether it was marked

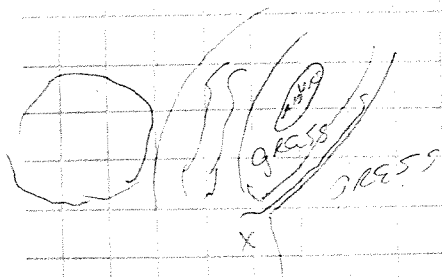


Just downstream S. of gentle cutbank
w/ log jam w/ small falls above

Marten Cr. 29 June 91

11:10 sprinkling

single ♀



up S. of campsite

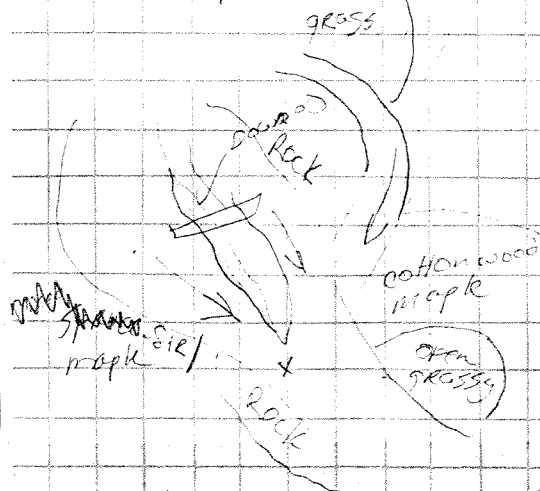
Marten Cr.

29 June

13:15

single ♀ in riddle - flew down

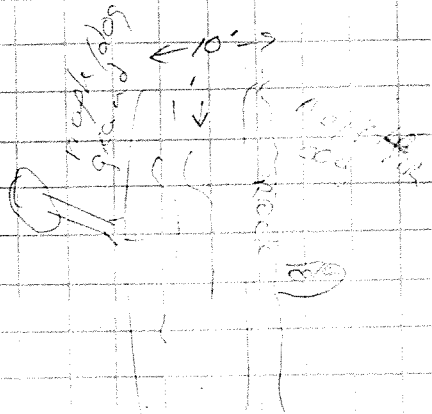
- Just up S. of opening w/ sand



Marten Cr.

1500 Single ♀

Under roots of overhanging
cottonwood + dogwood



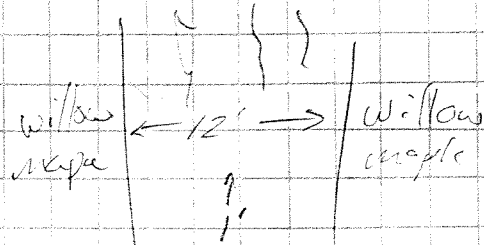
S. bend Marten Cr

1 July

2 ♀

1600

Both clods warm
= believe pushed them
together! Moving upstream
together



Below

at cutbank on road
flat open area

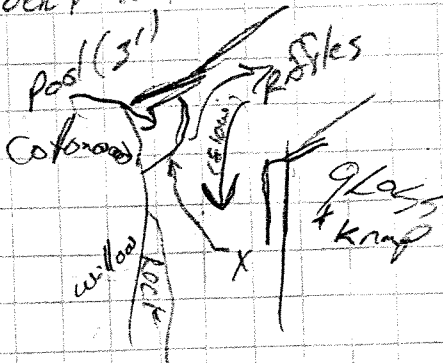
03 Aug 91

S. Fk. Marten

♀, 4 young

By log retaining wall
downstream S/ Keeley Cr.

Cottonwood grove w/
Alder + Willow



Vermillion River 10 Aug
sm Feeder Creek

SINGLE ♀

1:30

